

FOR ESIGHT

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Education Reform and Equitable Excellence: The Kentucky Experiment

Editor's Note: The following article is an abbreviated version of an electronic book that was published in 1999 and updated recently to incorporate new data. The full-length version of the following article is available online at: www.uky.edu/~proeder/kerabkupdate.pdf. The e-book can be ordered by contacting the author at: RDSpub@aol.com or proeder@pop.uky.edu.

By Phillip W. Roeder

April 11, 2000, marked the 10th anniversary of the signing of the Kentucky Education Reform Act (KERA) of 1990, a significant milestone for the development of Kentucky's system of public education and for the broader history of the state, for the overall progress and well-being of the Commonwealth. Reaching this anniversary means not only that Kentucky initiated one of the most comprehensive and substantial reforms of public education, but that it managed to sustain that reform over a decade of significant changes in the political and economic life of the state. Likewise, this anniversary is not only a time to celebrate all that has been accomplished by KERA, but also a time to recognize that much still needs to be done to achieve a world-class system of public education in the Commonwealth.

This article summarizes a recent study of Kentucky's public educational system under KERA, published by the author as an electronic book in 1999 and updated in February 2000. The study examines and attempts to explain the performance of Kentucky schools and school districts over this decade of reform. The initial study, published in early 1999, found that school performance in the period 1993 to 1997 was determined to a large extent by a set of related factors—social, economic, and organizational conditions that existed

prior to the implementation of KERA. Using multivariate models, the 1999 study found that the degree to which a school was characterized by poverty and disadvantage largely determined how well it performed over the five-year period. When controlling for factors, including school size (enrollment) and type (elementary, middle, or high school), teaching resources (student-teacher ratio), extent of bureaucracy (school and district), competition from private schools, district revenue and district achievement prior to reform, change in revenues due to KERA, and whether the schools were early adopters of family resource/youth services centers and school councils, underperforming schools were

much more likely to have higher proportions of poor and minority children and to be located in school districts with lower levels of previous academic achievement and fewer financial resources prior to implementation of KERA. It was found that differences between schools in proportion of poor children could translate into substantial gains or declines in performance when controlling for these other factors. These findings were consistent for both yearly cross-sectional models and for models assessing changes in performance over time.

The February 2000 update of this research project focused primarily on Chapter Four of the earlier book and assessed the performance of Kentucky schools using additional



Photo by Rick McComb, Kentucky Department of Education

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data from the 1998 KIRIS and 1999 CATS accountability systems. The findings of the 1999 book do not change with two additional years of school accountability data; and in fact, the conclusions are now supported even more strongly with the addition of the 1998 and 1999 data. After controlling for several school and district factors, not only does disadvantage continue to be the strongest determinant of school performance, but the entire system now appears to have evolved into a relatively stable pattern of accountability behavior.

The Persistence of Disadvantage

Throughout the decades-long struggle to improve Kentucky's public education system, primarily through the reinvented system enacted in 1990 called KERA, most policymakers, reform advocates, and educators have maintained a consistent emphasis on the goal of increasing excellence in schooling. Although much disagreement exists over defining educational quality and measuring school performance, there appears to be an overwhelming consensus that achieving excellence is the paramount goal of the educational system. Parents, educators, business leaders, policymakers, and others want high-quality schools, even if

they do not always agree on definitions of this complex concept.

Despite the dominant emphasis on quality, American public education has always faced a dilemma: Is it possible to provide the highest quality schooling for all children, all regions of a state or nation, all schools, and all communities? Can disadvantaged schools with high proportions of poor children and fewer educational resources perform at the same high levels as schools with less poverty and more resources?

The 1999 study found that some disadvantaged schools did perform well (or better than would be predicted based on their poverty), but most did not. Eight of these disadvantaged, high-performing schools were examined and assessed in Chapter Five with several interrelated factors seeming to explain how these schools managed to perform at

high levels despite their disadvantages. Regardless of the lessons that might be learned from these special cases, it is important to emphasize that the strongest and most consistent predictor of school performance in Kentucky from 1993 through 1997 was child or family poverty.

To highlight the continuing problem of equity and disadvantage in Kentucky's schools, this paper will begin at the end, that is, the end of Chapter Four from the 1999 book. An update of Table 4-10 in that chapter (see Table 1) compares school performance using accountability scores (KIRIS and CATS) for the 1993-99 period for the top 10 percent of schools that were most advantaged and bottom 10 percent that were most disadvantaged prior to the initiation of KERA. Disadvantage is measured as a composite index (factor score) that combines proportion of children in the school eligible for subsidized meals, as well as state/local revenues per student and academic success in the school district prior to the initiation of KERA. The comparison shows that after almost a decade of comprehensive and sustained reform, Kentucky is still a long way from achieving equitable excellence in the public schools. The performance gap between advantaged and disadvantaged schools increased dramatically from 1993 to 1999, but especially from 1996 to 1999. The gap widened from 10.2 points in 1993 to 16.0 points in 1999, but the key year was 1997, when after three years of relatively improved performance and a closing of the performance gap to less than 8 points, disadvantaged schools began to lag even further behind the advantaged schools.

These data suggest that schools in poorer communities have yet to overcome disadvantages developed over decades and generations of poverty and underperformance. A crucial question for those interested in equitable excellence is why after several years of a modest but steady narrowing of the performance gap did this already large differentiation double in three years (from 8 to 16 points)? To try to answer this

TABLE 1
Accountability Scores
For Advantaged and Disadvantaged Schools *

	Total Mean	Advantaged Mean	Disadvantaged Mean	Performance Gap
1993	35.9	42.4	32.2	-10.2
1994	41.5	48.7	39.7	-9.0
1995	45.6	52.5	44.2	-8.3
1996	44.1	50.5	42.6	-7.9
1997	48.3	56.8	44.8	-12.0
1998	47.8	56.8	43.2	-13.6
1999	59.6	70.0	54.0	-16.0

* The N's for all schools (total mean) range from 1137 to 1190; N's for advantaged and disadvantaged schools range from 107 to 116. The scores for 1993 through 1998 are from KIRIS; the scores for 1999 are from CATS.

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and related questions about school performance, data from the 1999 book are updated and examined in more detail.

Table 2 summarizes accountability scores for all Kentucky schools for 1993 through 1999 and, similar to Table 1, it shows uneven progress in performance. The mean score for all schools increased from 1993 to 1994 and from 1994 to 1995, but declined slightly in 1996. After another modest gain from 1996 to 1997, scores declined again slightly in 1998 before increasing substantially in 1999. As an indicator

Solidifying School Reform

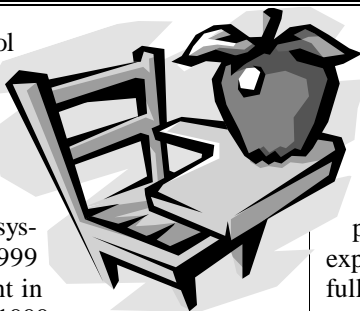
An issue that educators and reformers often fail to consider concerns stability or unpredictability in student achievement or school performance. An unacknowledged assumption of many advocates of school reform is that school performance is and should be somewhat unpredictable. This seemingly counter-intuitive and perhaps unusual assumption follows directly from the more commonly accepted assumptions that all students can learn at high levels, and organizational and curricular changes can have significant impacts on student learning. Despite research studies that find student learning and achievement to be affected to a large extent by various mental, emotional, and physical characteristics of individual children; by the backgrounds, structures, and processes of their families; and by long-standing social and economic structures in their communities;

TABLE 2 School Accountability Scores, 1993-1999 *							
	1993	1994	1995	1996	1997	1998	1999
All Schools (mean)	35.9	41.5	45.6	44.1	48.3	47.8	59.6
Top 10 th (mean)	48.2	50.6	54.8	52.6	57.5	56.6	68.7
Bottom 10 th (mean)	26.1	36.4	40.3	38.6	42.2	41.9	52.3
Performance Gap	-22.1	-14.2	-14.5	-14.0	-15.3	-14.7	-16.4
Minimum Score	19.1	24.6	25.1	24.2	17.8	25.1	33.3
Maximum Score	69.8	76.5	79.6	75.6	80.9	77.3	88.7
Total n	1156	1186	1137	1138	1175	1188	1190

* The categories of top and bottom tenth are based on scores for 1993 with those schools carried through each succeeding year. Performance gap is the absolute difference between the top and bottom tenth for each year. The scores for 1993 through 1998 are from KIRIS; the scores for 1999 are from CATS.

of the overall progress in school performance under KERA, the improvement in average school scores from 1993 to 1999 was an impressive 23.7 points or an increase of 66 percent. However, because the state initiated a new system of accountability in 1999 (CATS) and because improvement in the transition year from 1998 to 1999 was almost 12 points or 25 percent, this substantial increase in performance over the seven-year period may be misleading. Although the system of KIRIS testing and scoring changed in several important ways throughout the 1993-97 period, the accountability system was changed significantly in 1998 (CATS) and used for the first time in 1999. Because of this major system change, it seems likely that the large increase in average score in 1999 is more an artifact of the new testing system than a real increase in student learning or school performance.

In addition to describing performance for all schools, Table 2 compares the highest-scoring schools to the lowest-scoring schools beginning in 1993 and follows these same two groups of schools through 1999. These data show a pattern of performance somewhat similar to the advantaged and disadvantaged schools in Table 1. The worst-performing schools in 1993 (bottom 10th) made substantial improvements in 1994 and closed the performance gap from 22 to 14 points, but then leveled off through 1996 before falling further behind in 1997, closing the gap slightly in 1998, and then falling behind once again in 1999. Except for an initial spurt of improvement in 1994, the poorest-performing schools in 1993 have not closed the gap with the highest performers in 1993; in fact, they now appear to be falling further behind the initial highest performing schools, at least since 1994.



education reformers believe that certain educational strategies, teaching practices and methods, and curricular innovations will greatly improve student achievement and school performance. If not, why continue to develop and implement reforms in search of educational excellence? When the right combinations of effective programs and practices are found by policy and program experts and when these programs are implemented successfully by skilled educators, even previously low-achieving

TABLE 3 School Accountability Score Correlations, 1993-1999 *						
	1993	1994	1995	1996	1997	1998
1994	.56					
1995	.54	.68				
1996	.54	.62	.71			
1997	.57	.58	.61	.75		
1998	.52	.57	.57	.68	.82	
1999	.53	.53	.56	.65	.74	.87

* Product-moment coefficients. N's range from 1044 to 1175. The scores for 1993 through 1998 are from KIRIS; the scores for 1999 are from CATS.

students and poorly performing schools will perform at higher levels. This optimism, rationalism, and belief in individual as well as social progress and perfectibility are basic components of American culture and affect most aspects of society and the economy as well as public education.

In addition to examining and comparing changes in school accountability scores over time to assess the impact of reforms as found in Tables 1 and 2, another way to assess impact would be to measure the degree to which the entire system after KERA has stabilized. Too much stability or predictability might suggest little or no impact of the extensive reforms. Such stability would suggest that whatever was taking place in the successful schools prior to the 1990 reform remained in place after reform (these schools would likely be successful regardless of how extensively the system was changed); and conversely, whatever was taking place in the less successful schools was not improved by the reformed

system (something other than the reforms was keeping them from improving).

The questions are: how stable has school performance been under KERA, and how much stability is too much? Tables 1 and 2 show uneven progress over time and suggest at least modest instability in school performance. Although the implication of this uneven progress would be that schools can and do change substantially from one year to the next, further analysis of these data in Table 3 instead finds increased stability in school performance. Fewer schools are experiencing such large relative gains or declines that they leap ahead or fall far behind in the rankings of schools from one year to the next, especially in the latest years of accountability. Examination of bivariate correlations for each succeeding year of accountability shows a steady increase in strength from .56 for 1993-1994 through .68, .71, .75, .82, and .87 for 1998-1999 (the diagonal of Table 3).

It is important to note that the highest correlation in Table 3 of .87 for scores in 1998 and 1999 is for the last year of KIRIS and the first year of CATS—the restructured accountability system. Despite this major restructuring and despite the extremely large increase in average scores from 1998 to 1999, school rankings remain quite stable in this transition. Almost 76 percent of the variation in 1999 scores can be “explained” or predicted by 1998 scores and almost 55 percent of variation in 1999 scores can be predicted by scores from two years previously in 1997. Whatever can be said or concluded about school performance, whether measured by the old KIRIS or the new and improved CATS, schools now appear to be in a relatively stable system of performance and accountability.

The increased stability in performance shown by the correlational analysis in Table 3 complements the data in Tables 1 and 2, and may help explain why disadvantaged schools are falling further behind advantaged schools or why initial poor performers have not been able to catch up to the high performers; and most importantly, why both groups of laggards may have a very difficult time making substantial performance gains or improvements in the future. After the initial “shock” of KERA in the period of early implementation (early to mid-1990s), the complex patterns of behavior of people and systems appear to have stabilized or solidified in such a manner that very few schools are now making the sizable improvements in performance necessary to move up in the school performance rankings. If experience is starting to tell, and if patterns of resource allocation, curricular emphasis, school leadership, teaching practices, and other important components of the complex educational system are becom-

ing “locked in,” along with quite stable economic and social conditions of families and communities, it may take another comprehensive and significant shock to the system similar to KERA to have any substantial impact on the distribution of excellence across Kentucky’s school districts.

Conclusions

Since the adoption of KERA in 1990, disadvantage continues to be the most substantial and significant determinant of the performance of Kentucky schools. In addition, school performance is stabilizing, indicating that the large gap between the haves and the have-nots is not likely to decrease or be reversed without significant policy changes. What are the implications of these findings for policymakers concerned with providing an effective and efficient system of public schools prepared to meet the challenges of the 21st century? What actions should be taken or adjustments made to address the performance gap and continue to strive for equitable excellence? There are many possible reforms in policies or programs that offer some possibility of achieving more equitable excellence in Kentucky’s primary and secondary school system, but two that seem particularly relevant are more equitable funding and more equitable distribution of teaching resources.

More Equitable Funding.

The first and most obvious policy tool to deal with inequalities across Kentucky’s local school systems would seem to be more equitable funding across school districts—the primary impetus for the original suit that challenged Kentucky’s system of school finance and resulted ultimately in KERA. To continue and even accelerate improvements in the performance of Kentucky’s primary and secondary schools, more financial resources are needed. But the need is greatest in the poorer schools and districts. Increased salaries for instructional staff, more teaching resources, and improved physical facilities are but a few of the demonstrated needs for increased funding. Some argue that poorer schools with more social and educational disadvantages do not need equal resources; they need more resources than schools serving children from well-off families living in well-off communities. To accomplish such a goal, more new dollars would have to be invested in the K-12 education system, and the SEEK program would have to be revised so that poorer districts acquire even more state resources. Money is certainly not the only resource needed by schools, and money alone cannot solve all the problems faced by our less successful public school systems, but resources do matter.



More Equitable Distribution of Teaching Resources.

Another important focus for possible improvements in school performance is teaching. Some experts now claim that not only does good teaching improve learning and performance significantly for all students, it has especially large and positive impacts for disadvantaged children. If the key to successful learning, especially for poor children, is teaching, how can underperforming and disadvantaged schools improve and increase their teaching resources? Answers to this question must assume that:

- (1) good teaching can be defined and measured with reasonable precision
- (2) teacher training programs in our colleges and universities know how to produce high-quality teachers (regardless of the types of individuals entering these programs either at the undergraduate or graduate levels), and
- (3) disadvantaged and underperforming schools can acquire their fair share of good teachers.

Since these three assumptions about good teaching are somewhat questionable, in order to try to bring more and potentially better teaching resources to disadvantaged schools, I propose that an experimental program called the Kentucky Teaching Corps be created. Such a program would target the bottom 10 percent of poorest-performing districts or schools and pay new or recent college graduates to serve a two-year apprenticeship in these underperforming school systems. It would assign two or three apprentice teachers per school to work under the supervision of a master teacher from another successful system and a supervising teacher on site.

Further, it would pay these apprentice teachers salaries and benefits comparable to new teachers in the system, but as an incentive to locate in these more disadvantaged schools, also pay off their education debts accumulated while seeking their college degree (or if they have no college debts offer them bonuses if they stay with the program for the allotted two years). This apprenticeship period might help attract more people to the teaching profession, enable prospective teachers to become more effective in the classroom, especially working with disadvantaged children, and assist the schools and children they will work with during this apprenticeship.

To achieve greater levels of excellence in Kentucky schools and overcome the apparently stable patterns of inequality that have developed in the late 1990s, some type of educational Marshall Plan may be necessary. A significant, comprehensive, and long-term investment of educational resources in the poorest-performing school systems may help achieve higher levels of equitable excellence. Another shock to the system like KERA may be necessary, but since KERA II seems unlikely any time soon, the two proposals on funding and teaching resources presented here may be more feasible and acceptable alternatives. Some may characterize proposals for increased investments in the public schools, especially in poor communities, as financially and political unfeasible or even undesirable, but what could be a higher priority than equal educational opportunity and a better future for all Kentucky children, not just those fortunate enough to be attending successful or resource-rich schools? ☒

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Filling the Teacher Quality Data Void

Editor's Note: In 1999, the Kentucky Department of Education (KDE) launched the Kentucky Teacher Data System Improvement Project to develop a plan or process for resolving current gaps in data about Kentucky teachers. This article summarizes the full report of a Steering Committee formed by KDE to examine data issues and recommend a new data structure, which was approved in December 1999. The report was prepared by Dr. Stephen Clements, an assistant professor in the University of Kentucky's Department of Educational Policy Studies and Evaluation.

Teacher Quality, School Improvement, and the Education Data Nexus

Arguably, the thrust of the 1990 Kentucky Education Reform Act (KERA) was to improve teaching and learning through an array of teacher improvement policies, but the early years of KERA were dominated by implementation challenges. Now, almost a decade after KERA's passage, attention has begun to shift to teacher quality, in part as a result of a recent national focus on the issue. A number of efforts to assess teacher quality have been undertaken here, including a joint legislative/executive Task Force on Teacher Quality charged with recommending legislation for the 2000 session of the General Assembly. The Task Force became a focal point for recommendations from various private and public entities examining teacher quality. Legislation incorporating a few of these recommendations was debated in the 2000 session of the General Assembly. While the teacher quality bill that resulted did not pass intact, one thing became very clear: data about teachers in the Kentucky are deficient and cannot be used to answer basic policy questions on the minds of policymakers and the public.

What We Know and Don't Know About Kentucky Teachers

Available data *do* provide basic facts about Kentucky's estimated 40,000 teachers:

- About three fourths are white females; the balance are mostly white males; minorities represent only 3.5 percent of the teacher workforce.

- State teachers average 16 years of experience, but most are clustered at the low and high ends of experience levels.
- Three fourths have a master's degree or its equivalent, compared to national and regional averages of 47 percent.
- Teacher training students in Kentucky average 21.5 on the ACT, above the state (20.1) and U.S. (20.9) average.
- Recent teacher training graduates score right at the national averages on the general skills components of the Praxis II exams, but subject area scores vary.
- 1996-97 salaries were about \$34,000, below the U.S. average of \$38,500 but above the southeastern state average.
- About one fourth of Kentucky's teachers are within three years of retirement eligibility.
- Teacher supply is greater here than in most states, but many rural districts have shortages, especially in high school math, chemistry, and physics, and in special education.

Beyond these and sundry other facts about teachers, we know little about what they know and can do. For example, we know little about how many middle and high school

teachers are teaching subjects "out of field," which some policymakers define as having neither a major nor minor. Under current certification rules, it is nearly impossible to be certified to teach a subject with less than a minor, but in the past it was possible. While KDE has all teacher transcripts and theoretically could match training with teaching assignments, the data are not available in electronic form. Teaching assignments can only be matched with certification records, and, as certification rules change, they often only apply to newly certified teachers.

Teacher supply and demand data are also sketchy at best and only permit gross generalizations about shortages or surpluses. We know how many teachers are close to retirement age and where they are, but we do not know when they will retire. Similarly, we can track teacher training students by their numbers, discipline areas, and projected graduation dates, but many will not teach here or perhaps not at all. And none of the extant teacher demand projection models incorporates information about demographic shifts in the state. Thus, policymakers cannot respond to potential shortages of qualified teachers, a problem that may worsen as a wave of veteran teachers retire.

Similarly, we have almost no data on the professional development experiences of Kentucky teachers and, more importantly, on the differences these experiences may make in teacher and student performance. Because professional development is a significant state investment and the primary means for upgrading teacher knowledge and skills, it is crucial to know what effect it is having on student achievement.

On another front, KDE has been collecting massive amounts of assessment data on students and schools throughout Kentucky through the KIRIS and now CATS systems. Much of this data is distributed to school and district officials, some of whom use it to fashion local responses to assessment results. At the state level, however, these data have not been reviewed systematically or combined with other information on the state's public schools to identify the factors that contribute most to increased student achievement.

In the reform era, Kentucky has moved to judge school performance based on what students know and can do without real knowledge of what teachers know and can do. At this time, we cannot link the performance, training, or certification of teachers to student achievement. These data limitations are a source of continual frustration to decisionmakers who would like to make recommendations based on solid information, not intuition or best guesses.

Data Needs and Problems

Ironically, the issue of teacher quality highlights a more general and pressing concern, namely, the extent to which an assessment-and-accountability-based education system *requires* school communities to have access to a much broader array of performance information and to develop the



facility to analyze and respond to these data. Kentucky educators have been grappling with these data analysis needs during the various cycles of KIRIS and CATS assessments, the results of which largely determine school-level accountability index scores. Given this high-stakes accountability system, educators spend more and more time examining KIRIS scores. Likewise, the new annual School Report Card promises to elevate the importance of school-level data.

Increasingly, teachers and some legislators are calling for student accountability to be incorporated under KERA. Teachers, and indirectly principals, now bear the brunt of the accountability system, with the threat of sanctions if index scores do not improve at an acceptable rate. The CATS system is generating increasingly reliable and valid information on student-level performance, but many argue that only when the results lead to meaningful consequences will students take the exams more seriously.

The data needs of state education agencies are also rising. Likewise, the EPSB, Kentucky's main teacher policy-setting entity, needs to fill information deficits. At present, EPSB cannot link teacher coursework or performance with Praxis scores, certifications, or professional development needs. Moreover, the data needs of the Council for Postsecondary Education (CPE) are growing. The CPE has long kept information about students who enter Kentucky's postsecondary institutions, but policymakers want a more seamless education data system that links the postsecondary performance of students to elementary and secondary experiences. These data, they believe, can help us develop policies that enable the greatest number of Kentuckians to achieve optimal education attainment.

Hence, at multiple levels throughout the public education system, data needs are becoming more palpable. What Kentucky needs, in essence, is an education data infrastructure capable—in time—of answering policy questions. Without such information, decisionmakers in Kentucky will be forced to continue setting education policies without a firm evidentiary base. Among the policy questions that an adequate data structure could answer:

- Where and how much out-of-field teaching is taking place, and how is it affecting student achievement?
- How are teacher assignment practices affecting teaching, learning, and student achievement in Kentucky schools?
- What is the teacher supply-and-demand situation in Kentucky? Are recruitment and retention policies in some schools and districts more effective than in others?
- What are the professional development needs of Kentucky teachers? If those needs are being met more effectively in some places than in others, what policies might strengthen professional development services in needy areas?
- To what extent is student achievement, as measured on CATS or other assessments, related to teacher quality?
- How are factors associated with teacher preparation and certification—such as the college attended, test scores (e.g., ACT, Praxis, and GPA), student teaching, induction experiences—linked to teaching performance?

It is unlikely that any data infrastructure will answer all these policy questions in the near future, but it is important to work toward development of a system capable of doing

so. Without such a system, Kentucky policymakers will be obliged to make decisions based on hunches and inferences.

Kentucky's Education Data Problems

KDE collects a massive amount of information about many aspects of public schooling in the Commonwealth; however, much of it cannot be easily obtained or analyzed. The current problem with data might best be described as one of *fragmentation*, as most KDE data collection has arisen in response to new programs or policies, sometimes along division and program lines, but always within the technological limitations of the times.

These internal dynamics have led to an array of problems. First, it is difficult for KDE leadership to see the full scope of indicators of education system health. Second, data gathering activities sometimes overlap, so different offices ask for similar information at different times of the year, imposing needless hardships on school and district personnel. Third, KDE program data tends to be viewed as proprietary, making it unavailable for review and analysis.

While attempts have been made to address some of these problems, they have sometimes led to the creation of even more databases, or to the transfer of education data to state agencies outside of KDE. Moreover, some of the databases within KDE are so closely linked to one another that it would be difficult to fix problems in one database without addressing problems in others at the same time.

A traditional approach to eliminating fragmentation would be to replace the many disparate databases within KDE with a single, centralized, large-scale database. Constructing such a system, however, would be extremely expensive. Other states have recently devoted from \$12 to \$20 million on such systems. Such a system can lead to an array of problems, including the need to simultaneously find hardware/software solutions to *all* of the database problems across the institution. A single system could also prove inflexible if programmers make decisions that inhibit the ability to accommodate change. Moreover, given rapid changes in technology, the system's hardware/software infrastructure may well be obsolete or insufficient to meet rising data demands by the time it is constructed. Thus, the state could be saddled with a second-rate data infrastructure that it must live with for many years until additional resources for yet another improved system are allocated.

An Alternative Solution

As an alternative to a single system, members of KDE's Division of Integration Services proposed that KDE build an enterprise database system accessible through a web-oriented "portal," the sort that many private sector businesses and corporations are now creating, that can gather and sort data from the *existing* fragmented systems within the Department. Such a portal system would in effect create a unified virtual database that mimics a large-scale data system without the expense, decisionmaking dilemmas, and general constraints the latter system would entail.

An enterprise database and web portal system would be housed on a reasonably powerful PC server located within KDE's Division of Integration Services. The heart of the system would be a set of software tools designed to (1) ex-

tract relevant information via the Internet from various databases located on other servers or PCs inside and outside of KDE, and (2) use software that processes the data it gathers through so-called transformation tables, that reformat the data so the system can work with all data elements, and place data into specified locations within a relational database so that the information can be accessed. This step would allow the data to be “warehoused,” accessed, and mined within appropriate security restrictions. Another set of software tools would allow individuals with an Internet connection to access portions of the data through a web-based user interface.

An enterprise database and portal approach to solving current data fragmentation problems has several advantages:

- *Allows step-by-step database reconstruction*, effectively delinking extant databases so important data remains available while construction is underway.

- *Does not disturb underlying data systems*, providing stability within KDE and among school and district staff who submit data to KDE.

- *Provides better access to a broader range of data* that could enhance local involvement in schools, a primary but unrealized goal of KERA, and enable more informed policy-making at the local, district, and state levels of governance.

- *Reduces the data gathering burden on schools and districts*, eliminating redundant data requests and enabling electronic submissions of data.

- *Helps resolve concurrency problems that create significant lag times between data submission and reporting*, permitting more timely data gathering and verification.

- *Allows for eventual creation of a more traditional consolidated database*. Whatever the technological terrain of the future, the enterprise database and portal system will likely be more adaptable than a traditional system based on current technology.

- *Provides a mechanism for interagency data sharing and cooperation* among relevant agencies and institutions.

- *Reduces data system costs*. Since access by users is based on web technology, rather than specialized software, ongoing costs would be more modest. In addition, the enterprise database and portal system can actually be constructed through discrete database renovation projects, further streamlining costs. Moreover, the new system could reduce data gathering burdens on school, district, and KDE staff.

- *Aligns with other plans to move schools toward a uniform student data management software program*.

Conclusion

The enterprise database and portal infrastructure is the most practical, efficient, and promising way to enhance the Commonwealth's education data capacity. Information about teachers' certifications, coursework, and professional development backgrounds could help improve teacher and student performance across the state. Moreover, a well-designed and well-constructed system could become a national model, providing a wealth of data to policymakers, teachers, administrators, researchers, parents, and citizens. While it may take years to unfold, the benefits to the Commonwealth's public school system should be innumerable.

CHALLENGES FOR THE NEXT CENTURY

the Seventh Annual Conference of the

KENTUCKY

LONG-TERM POLICY RESEARCH CENTER

November 14, 2000, Northern Kentucky Convention Center, Covington, Kentucky

What forces, factors, and trends are affecting Kentucky's future? Center staff present broad economic and social trends influencing our future.

Is Kentucky moving toward a preferred vision of the future? A distinguished panel of Kentuckians considers Kentucky's progress. Panelists include: **Walter Baker**, former member, General Assembly; **Betty Bayé**, columnist, *The Courier-Journal* (invited); **John Berry, Jr.**, former member, General Assembly (invited); **Paul Chellgren**, Chair of the Board and CEO, Ashland Inc.; **Martha Layne Collins**, former Governor; **Gordon Davies**, President, Council on Postsecondary Education; **Wendell Ford**, former Governor and U.S. Senator; **Nancy Jo Kemper**, Executive Director, Kentucky Council of Churches; **Kris Kimel**, President, Kentucky Science and Technology Corp.; **James Klotter**, State Historian; **Sylvia Lovely**, Executive Director, Kentucky League of Cities; **Gerald Smith**, Director, African-American Studies and Research, UK; **Jane Stephenson**, Founder, New Opportunity School for Women.

How may financial, political, economic, and demographic forces affect future federal budgets, federal-state relations, and an array of spending programs? Dr. C. Eugene Steurle, a senior fellow at the Urban Institute in Washington, DC, a former official of the Reagan administration, and chair of the Technical Panel advising Social Security, discusses the future of Social Security and ways state governments and nonprofits may be affected as the federal government finds it increasingly difficult to initiate and sustain a variety of spending programs.

What does the aging of Kentucky's population portend for the future? Panelists present findings from the recently conducted *Kentucky Retirement Survey*, which provides insight into the financial preparedness, health status, and retirement plans of Kentucky's current and coming retirees.

What is the future of postsecondary education in Kentucky and how can we increase the number of students? A panel considers findings from the Center's multifaceted project on postsecondary education in Kentucky, including 1) a cost-benefit analysis of the public benefits from investment in postsecondary education; 2) a survey of high-school-age Kentuckians on attitudes and opinions about college; and 3) comparative case studies of selected high schools that explore possible explanations for the widely varying rates of postsecondary attendance among their graduates.

How can Kentucky create an entrepreneurial economy? The Kentucky Science and Technology Corporation discusses its strategy for and the factors needed to create a thriving entrepreneurial economy in the future.

Watch for further details at the Center's web site: www.kltprc.net and here in FORE-

Alternative Certification an Early Success

By Phillip S. Rogers



Because teacher shortages are predicted, alternative routes to certification now offered by the Kentucky Education Professional Standards Board (EPSB) may become increasingly important. One possible route is based on exceptional work experience. The EPSB approved the first application for this alternative route to certification in July 1998 and has since approved another 21 applications.

Approved applicants are issued a provisional certificate upon satisfactory completion of the Kentucky Teacher Internship Program. They are required to have:

- 10 years of exceptional work experience in the area for which certification is sought
- a bachelor's degree with a minimum grade point average (GPA) of 2.5 on a 4.0 scale
- an offer of employment at the secondary level (grades 9-12) in a school district
- an application for certification, submitted jointly to the EPSB by the applicant and the hiring school district.

A recent EPSB review of this route to certification, including interviews with the 22 teachers approved and their supervisors, found that 13 or 59 percent are men, who are usually outnumbered three to one in the field. On average, these newly certified teachers are 45 years old, and have an undergraduate GPA of 3.0. The majority, 16 of the 22, hold a master's degree or higher; one has a doctorate.

Ten (45 percent) of the applicants were granted certificates to teach in the math and science areas (physical science, math, and biology), subject areas that often pose recruiting difficulties, and four (18 percent) to teach business. The remaining certificates included two in industrial technology, and one each in communicative disorders, music, art, social studies, English, and Spanish. In most cases, these teachers were the only applicants for the position available.

As part of all alternative routes to certification, approved applicants are granted a one-year provisional certificate that allows them to teach while they complete their internship. Administrators typically saw these as appropriate, valuable, and successful experiences. When asked if they were satisfied with the teachers who had come through the exceptional work experience route, responses included:

- *He is one of the best teachers in the school.*
- *He is the best of the three teachers we hired last year . . . the other two came through a traditional program.*
- *Doing a great job . . . she fills a very specific position we would never have found through a traditional program.*
- *Has made tremendous progress . . . we were desperate for a physics teacher and this is working out great for us.*
- *He was our only candidate for the position . . . had a little trouble with classroom management at first but has done a great job learning how to use discipline.*
- *Send me more like her.*

Administrators typically observed that the maturity and the deeper level of knowledge application these teachers brought to the classroom was key to their success. One administrator observed, "His life experiences set him apart."

Identified weaknesses of these alternatively certified teachers were primarily in the areas of classroom management skills and pedagogy. However, most administrators reported that these interns were very receptive to supervision, particularly in comparison to traditionally trained teachers, and typically "self-corrected" pedagogical shortcomings while effectively communicating content.

Administrators were also asked to compare these alternatively certified teachers with traditionally trained first-year teachers. Among those surveyed, 60 percent said they felt students related better to the exceptional work experience teacher than to the traditional first-year teacher; the remaining saw no difference. Administrators who noted a difference attributed it to maturity and to experiences as parents and members of the community—something traditionally prepared, usually much younger teachers, typically do not have.

Finally, a large majority of administrators (90 percent) indicated that they felt the students were benefiting more from the teacher with exceptional work experience than from a typical first-year teacher, and the remaining 10 percent said the benefits were no different. Again, most administrators said the "real world" experiences of these alternatively certified teachers allowed them to make deeper and more varied applications of the curriculum, giving students hands-on experiences that typical first-year teachers could not provide.

Surveyed administrators said they planned to retain the exceptional work experience teachers, and most indicated that they would consider hiring others who had come to teaching by this route. They all stressed, however, that hiring decisions were made on a case-by-case basis, with more traditionally trained teachers usually receiving first consideration for a position. However, almost all of the administrators expressed appreciation for the exceptional work experience option that districts may use in filling hard-to-fill positions.

Of the 22 teachers who received their certification through the exceptional work alternative route, 20 (91 percent) are still working in the districts that originally hired them. The two who are no longer teaching in Kentucky moved out of the community, but both were given high praise by their administrators.

Though only 15 (9 percent) of Kentucky's 176 school districts have employed teachers who gained certification through the exceptional work experience route, 4 of these districts have chosen to use others: Jefferson County (5 teachers), Hardin County (3 teachers), Elizabethtown Independent (2 teachers), and Kenton County (2 teachers).

The exceptional work experience route to alternative certification appears to be working as intended, giving school districts access to a pool of content-knowledgeable candidates who want to teach, an option that may become increasingly important as a wave of veteran teachers retires. #

Scanning Kentucky

Emerging trends and issues that may affect the Commonwealth's future

Farmers' Worst Fears Realized

The 2000 federal quota for burley tobacco set by the U.S. Secretary of Agriculture is 45 percent below last year's, *The Courier-Journal* reported. Added to a 29 percent quota cut in 1999, the latest decrease threatens to force some farmers out of business. For Kentucky farmers, who grow about 71 percent of the nation's burley, that represents a \$429 million cut in income at the current average price of \$1.90 a pound. The combined effect of quota cuts for three straight years—9 percent for 1998, 28.8 percent last year, and this year's record drop—is that farmers can now grow only slightly more than a third of what they recently grew. Together with a flood in 1997, a drought in 1999, and an epidemic of black shank and blue mold, the farming community is dazed. "I challenge anybody to take a 65 percent cut in their income and see how they survive," said Paul Hornback, a Shelby County farmer who heads the Council for Burley Tobacco.

Burley is Kentucky's largest cash crop, and the missing dollars will be noticed at banks, farm-supply stores and other retailers across the state. The areas hardest hit are those where alternatives are very limited, such as Pendleton County where people live too far from urban areas to take factory jobs. Rural economies were bolstered by the tobacco-support program which was established during Franklin Roosevelt's administration to stabilize tobacco prices and make small, hillside farms feasible.

Potential Implications for Kentucky. This dramatic shift in Kentucky's agricultural economy, which tobacco has dominated for generations, is expected to deal "tobacco-dependent" counties a severe economic blow (see *Foresight*, 7:1, 2000) and have a ripple effect throughout the state's economy. Without successful alternatives, the decline of burley tobacco also may alter the Kentucky landscape, as small farmers are forced to sell off tracts of land for much-needed cash.

State Growing Older

Kentucky State Data Center Director Ron Crouch notes that fast-growing Lexington is also one of the country's fastest aging cities. A *Lexington Herald-Leader* article on remarks made by Crouch noted that the city's 1950s boom produced a large population group that is now entering or nearing retirement.

Because the population is aging, people are living longer and having fewer children, and more people are moving into retirement than into the workforce. That shift, Crouch notes, may overburden wage-earning taxpayers who will be left to

cover the costs of Social Security, Medicare, and Medicaid, programs that support retirees.

An older population also means scarce workers, Crouch observed. Moreover, the new economy will require educated workers. Many males, who have made a living with their strength, Crouch observed, don't have and aren't getting the education they need for the new "knowledge-based" economy. He also expressed concern about our disproportionate investment in the elderly versus education and other youth services. "If I took care of my old cattle at the expense of my young cattle, you know what kind of farmer I'd be?" Crouch asked. "Bankrupt."

Potential Implications for Kentucky. Some predict that the current imbalance in resources dedicated to children and young families will spark intergenerational conflict when Boomers become eligible for federal entitlements and tip the scales even further in the favor of older citizens. But Boomers, who will be the wealthiest, healthiest, most educated, and likely most activist older generation in our history, may yield unexpected surprises as they age. Indeed, energized by their newfound time and resources, they may again set out to change the world. The causes of their youth could resurface and eclipse narrow self interests, improving circumstances for all age groups. Whatever the outcome, policymakers will continue to face the inevitable need to balance generational interests without sacrificing one group at the expense of the other, as many believe today's entitlement structure has.

Wealthy Kentuckians Make Gains, Poor Lose Ground

The gap between the richest and the poorest Kentuckians has grown substantially since the late 1970s, according to a recent analysis of Census data from the March Current Population Surveys. Kentucky ranked eighth nationally in the growth of income inequality between those at the top and the bottom of the income ladder while it ranked tenth in the growth of the income gap between those at the top and those in the middle, according to a report from the Center for Budget and Policy Priorities, *Pulling Apart: A State-by-State Analysis of Income Trends*.

The good news is that wealthy Kentuckians have made significant income gains since the late 1970s, realizing \$41,491 or 49.2 percent more inflation-adjusted income for an annual average income of nearly \$126,000 a year during the 1996-98 time period. Indeed, this analysis shows a somewhat favorable position for wealthy Kentuckians relative to those at the top in other states. The wealthiest citizens in 19 other states have average incomes below those enjoyed by



their counterparts in Kentucky, who nevertheless remain well behind the national average for their income group, \$137,485.

Since the late 1970s, however, the poorest Kentuckians have lost an average of \$436 or 3.7 percent of their annual income which averaged just \$11,365 a year between 1996 and 1998, compared to a national average of \$12,986. Ten other states were found to have lower average incomes among those at the lowest quintile. In contrast to income inequality trends in Kentucky, five other southern states enjoyed a faster rate of growth among those at the bottom of the economic ladder than those at the top.

The top-to-bottom ratio for 1996-98 was 3.9 in Kentucky compared to a national average of 3.2 while the top-to-middle ratio stood at 2.9 compared to 3.0 nationally. Middle-income Kentuckians made gains, but they were modest compared to those of wealthy Kentuckians. When adjusted for inflation, the average income for middle-income Kentuckians grew 11.5 percent or \$4,511 to \$43,722 a year, compared to the U.S. average of \$46,530.

The share of income held by both middle- and low-income Kentuckians fell over the period examined. By 1996-98, those at the bottom held only 4.7 percent of the state's income, compared to 6.3 percent in 1978-80 while middle-income Kentuckians held 16.6 percent of overall income, compared to 18.3 percent in 1978-80. In contrast, the share of overall income held by the wealthiest Kentuckians increased sharply from 36.7 percent to 44.5 percent.

Potential Implications for Kentucky. Beyond the obvious disparities in quality of life that such income gaps produce, this report emphasizes the well-documented but not-well-understood impact that income inequality has on health outcomes, which are so evident in Kentucky; on geographic disparities that affect the quality of schools and housing; and on social cohesion, trust in government, and participation in democratic processes. Ultimately, the report suggests, income inequality distances economic groups from one another to the extent that the poor are alienated from the mainstream and the middle class has little or no familiarity with the problems the poor face. In turn, the political process is less responsive as middle- and upper-class concerns dominate the political agenda.

Electronic Shoppers Double

Online shopping is expanding at extraordinary rates, a new study reported by *ABCNEWS.com* confirms. More consumers are buying more often and spending more money, according to the study, which was conducted by consulting and auditing firm Ernst & Young LLP. In 1999, for example, U.S. consumers made an average of 13 purchases online and spent \$1,205—that's compared to just six purchases and \$280 spent in 1998. The number of U.S. consumers who shopped online in 1999 more than doubled compared to a year ago, the study found. Further growth is expected in 2000, said Stephanie Shern, global director of retail and consumer products for Ernst & Young. The firm estimates U.S. online sales will nearly double in 2000 to at least \$45 billion. Shern noted that U.S. consumers outrank other global consumers when it

comes to online shopping. In 1999, 39 million U.S. consumers used the Internet to shop, compared to 8.3 million Europeans.

Potential Implications for Kentucky.

While online retailing is in vogue and policymakers are reluctant to stifle the engine of our economy, storefront retailers, particularly mom-and-pop's, face increasingly stiff competition. As broadband catches on and the scale and scope of Internet projects at major retailers grow, small businesses may have a tough time finding a niche. Moreover, the cost of attracting online customers is very high, according to Stan Brown, who leads Ernst & Young's online retail consulting practice. As a consequence, policymakers may face new pressures from storefront retailers, who collect the taxes that become public sector revenue and generate jobs in local economies, to level the playing field. Arguably, they are playing by rules that, so far, don't apply to e-tailers.

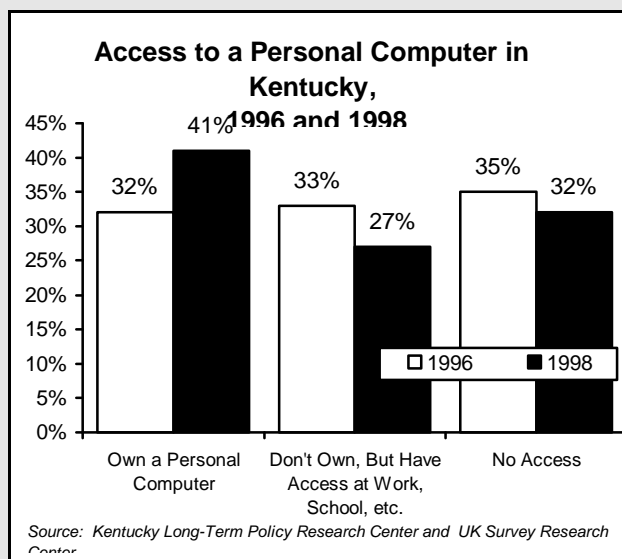


Digital Divide Still Wide

Today, 43 percent of U.S. households have computers and Net access, up from 35 percent a year ago, according to new data from Forester Research Inc., reports *Business Week*. But the notorious "digital divide"—the gap between the country's technology haves and have-nots—isn't closing. Much of the gain in online penetration has occurred in the middle class. In households earning \$50,000 to \$74,999, for instance penetration jumped from 47 percent in early 1999, to 62 percent this year. But households with incomes under \$15,000

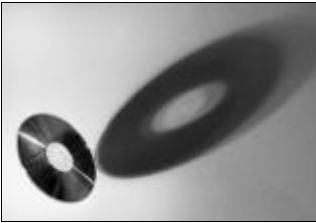
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VISIONING KENTUCKY'S FUTURE measures & milestones 2000



edged up just two points to 11 percent. Some predict that the divide will never close without a relentless effort to catapult everyone into cyberspace. The President recently proposed \$2 billion in tax incentives for companies that donate computers and \$150 million for teacher training, but Congress is still mulling the ideas over. While hundreds of companies say they'll participate, the funds they and the government have pledged add up to less than one fifth of the \$50 billion the industry spends each year on employee training.

Potential Implications for Kentucky: A persistent digital divide in the Commonwealth could forestall the promise of




today's buoyant economy. Today, computer literacy has become a core skill, one that those without ready access to a computer cannot easily gain. Broader access to computers will also help foster the higher

skills that today's dominant employers are seeking, the entrepreneurial talents needed to capture more New Economy opportunities for ourselves, and the levels of comfort and savvy that are needed to open wide the doors to electronic learning.

Eastern Coal Reserves Dwindling

The thickest seams of coal are nearly depleted in some areas of eastern Kentucky, raising profound implications for an industry that has been integral to the region for a century, the

Lexington Herald-Leader reported recently. More than half the thick coal has been mined out in several premium seams in Appalachian Kentucky, according to new estimates by the Kentucky Geological Survey. The estimates, which will be used in maps, confirm earlier assessments about coal depletion here, but result from a larger, more comprehensive study. They raise questions about how long the state's coal industry can sustain annual production of 150 million to 160 million tons—and the jobs it fuels—given current technology and prices. The state geological survey won't predict how many years the Kentucky coal industry can sustain current annual tonnage, but the study shows reason to be concerned about long-term production. As geologist Jerry Weisenfluh observed, "What the industry is facing right now in Eastern Kentucky is diminishing reserves."

Potential Implications for Kentucky: State policymakers have recognized the difficulties facing the coal industry by creating a tax credit for burning Kentucky coal, approving an incentive program to build new coal-burning power plants in coal-producing counties, and giving coal companies a tax credit for mining thin seams. The substantial amount of coal that remains offers many opportunities to develop high-quality reserves and fill niche markets at higher prices. Underground mines in coal seams that lie deeper, below the bottoms of valleys, also offer alternatives, albeit expensive ones. The future prospects of the coal industry will, in large part, be determined by the market and the responses of industry to the technological challenge these reserves pose. 

FORESIGHT

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